

SINCUS NEWS

Sinclair Computer Users Society
1229 Rhodes Rd
Johnson City, New York 13790

JAN/FEB 1987

November meet- due to lousy weather, attendance was light. I went to a Computer Show over at the NYSE&S Building- should have stayed at the meet, PCs and PC clones- ech.
December meet- we saw Don Lamen's "HASP"- a T81000 machine hexadecimal assembly program (several hundred hours in the making). Using a 16K RAM pac, he squeezed a 2999 byte program above RANTOP that does the following and more:renumber, disassembly, catalog tapes, basic, block,list, REM set, memory free, and more. Using a sort program he copied from ZX Computing, he loaded "Sort" (see listing below) in the T81000 with "HASP" above the RANTOP and proceeded to go thru all the functions of his program. Most of the program is user friendly with all inputs in hexadecimal. If interested in the program contact Don Lamen, at next meet or write him, RDNS, Box 3404, Windsor NY 13856

Hes Brzowski gave a short talk on the "Undocumented Z-80 Instruction set". If you look in the back of your user manual, under codes, look for after CB, starts on page 239. On page 240, near the bottom of the page, and top of the next, you'll see a gap in the instructions, due to a bug in the processor, you will fill with 1's instead of 0 if one calls all b.

Gary Ennis demoed "Scrabble", a Spectrum program, using a composite color monitor. The game has a 16000 word dictionary, but if you use a word not in it, the computer will trustingly ask you if it really a word. Why, yes, sure by golly! A very decent program, if you like Scrabble (the board game), you'll enjoy "Scrabble". Gary picked it up from a software house in England, and just recently got around to enjoying it.

John Colonna and myself tried to direct connect two 2068s via the 2080 modems. Not being too sure what would happen, John was a little nervous about watching for smoke, so he just closed his eyes and prayed. It worked, we had one monitor between us, so we went to half duplex, and one machine typed on the screen, ENTER and then the second typed on the next line. We were trying this to be able to demo modems at the next meet. While it may not have seemed impressive, right away some saw the possibilities for "looking" at unbreakable software. After some time using this procedure via Ma Bell's phone lines John and I hope to show up and down loading between 2068s and transmission of data, programs and pictures.

A second swap tape was received from the Cleveland TBUS and it "hopefully" will be returned with a few of our home made efforts-we cannot expect to keep getting unless, we give, so come on send in your copied from magazine, newsletter or home made programs. Give REM statement credit where due, please. Send me your efforts on a 90 minute tape, and I'll send a mix of 2068 and Spectrum programs. Include any documentation in REM statements. No copyrighted commercial programs thank you.

Via Dave Schoenwetter and John Colonna, we have a copy of "The Guide to T/S Telecommunications" by Pete Fisher and Steve Ishii, POB 2002, Temple, AZ 85281 write for a copy. Enclose a couple bucks for the photocopy edition or \$5 for the deluxe edition, and your address. We'll attempt to carry some of this 'fanastic' doc. in this and next couple issues. GET a modem- learn to use it and have a ball! These guys deserve a very large round of applause for their efforts and should be recognized for their efforts, Thanks Pete and Steve

We are starting to swap with the Dallas T/S Amstrad Users Group, this brings to 26 the number of swaps we maintain. Hello and welcome to new members; James Wilson, Akron OH; Dane Stegman, Akron, NY; Urouse William, Jr, Germany; Walter Hayes, Parma, OH; Bob Welburn, Lake Worth, FL; Bernhard Meyer, Oceanside, NY; Robert Love, Arlington, VA; Marinus Heuseveldt, Lantana, FL; and Lowell Heine, Minneapolis, MN; Laurie Futrell, Tucker GA and Robert Love, Arlington, VA; thank you for your membership and we look forward to HEARING from you all-we need articles-write-review- say hi- sell something-look for something!

NEWS; via Computer Shopper and E. Arthur Brown....I did not pay a bunch of attention the first time I read the ad for 'PC Pictascan Graphics Grabber', page 5, E11 of Brown's latest catalog until I saw it in Computer Shopper-Jan '87 issue. This little device is the brainchild of Orrin McBill the inventor of the MPRY-RE2 64K RAM for the TS1000, monitor conversion kits for the TS2068, and the 6502 Cross assembler for the TS1000 /2068 and other programs. The \$149 device rides on the printer head of a Epson printer, and reads a photo or document you have on the printer platten. The data goes back to the PC. This little idea could lead to greater and better things for the 2068- yes/no? E. A. Brown Co, 3404 Pawnee Dr., Alexandria, MN 56308 tele:612-762-8847

NEW: Received this rather cryptic message and if it makes any sense to you, good'

Model Rockets

SI-FI Models

SI-FI Computers* contact;

Computer SIGS

Atari, Apple

C=, Timex/Sinclair

SLC. Dennis Bishop

1647 Lilac Rd.

Ramona, CA 92065

BBS Network

Starnet- 24 HRS.

619-562-0150

STARNET-02

619-447-3448

STELLAR WINDS NEWSLETTER YEARLY DUES \$2.00

REVIENS: "Artworx 1.1", by NovelSoft, Ariel S. Fraulich and David C. Ridge. 106 Seventh Street, Toronto, Ontario Canada, brought thru E. A. Brown see address above, for \$19.95 plus sh.

You get your monies worth with this program! First a cassette with a Spectrum version on one side and the TS2068 on the other. In addition to Artworx 1.1, there is ARTBALLERY and five samples of art to be loaded into ARTBALLERY, to give you something to work with and learn how to use it. And second, very well written documentation, as user friendly as it is, you still should read the instructions.

I had two problems, one the orginial cassette is hard to load - apparently a individual problem as other users have not had this problem. Two, a very touchy joystick, in some modes, ZOOM and coloring the paper, I was in the menu more than I was out. But again, an individual problem not noticed by others. I'll try a new joystick, and if Santee was nice, sooner than later. [*Santa was, it does make a BIG difference for the better*] The suggested poke for a not so touchy response was so sluggish as to be near impossible to get out of the mode and back to the menu.

Being used to the Orginial Artworx there was a bit of getting used to the new. I miss and still do the x,y coordinates at the lower left of screen. I like the new typesetting arrangement, but have yet to get used to the growing circle. Erase is different, and BETTER -if you can get exactly the shape you misdrew-you can erase arcs and ovals, and with ZOOM you can erase EAXCTLY what you want' UNDO is great, erase last since menu. RAY is different than I remember it and I think better. FILL is FAST. COPY-BIG-SMALL similiar as before, but BIG acts strange - I get ABORT message some times but not othertimes, with no reason apparent. The BEST and WORSE is the two click on the fire button (on joystick) to get menu. I think a fire button on top of the stick is the better design, other wise, two hands and all thumbs gets the menu when I didnt want it. But it is a GOOD feature. [*A joystick with fire button on top of handle was delivered on 12-25 and all around improvement was noted*] In part of having used both the versions of Artworx, I eventually came up with the idea, intergrated modular software, to be able to mix and match the best of each.

Having talked with others who used both, and in spite of negative opinions of the worth of paying twice for both, I went ahead and got version 1.1. I'm glad I did. (see art

work on the ZX-79) This was done with Artwork and Artwork 1.1, and with "Paint", which I copied out of the Las Vegas TSUB Newsletter, March, and modified slightly. One can also employ other "art" programs on one screen. IF I had disc, I'd have every graphics program on disc, and madly switch back and forth using the best of each to produce a piece of 'art'.

VIENS; I have a an idea and no time to go anywhere with it- now with more and more hooking up disc drives to the 2068, is there software that is a DOS ? Menu driven software, that loads functions and files into the RAM to be used, then new data is written back to disc?

Is there any software that is intergrated and or modular? Can a graphics program be built around a basic frame work, and then the user adds and subtracts various functions. Say the menu offers, three shades to paint with and 5 type styles to add text with. Your needs call for no painting and 8 tpestyles, couldn't there exist a way to commercially modify the program, to tape and disc alike, so you could end up with a usable program, and the capacity to change. All the different graphics programs on the market have a couple bright ideas, and lack that one or two items, that cause you to buy another, and switch screens back and forth. Buy one, and select from a catalog one or more option packages to be added on at the store or at home. Some programs could have several levels and plateaus of difficulty, and on getting the 'secret' answer of level 1, gets you the privilege of buying level two, and ad nausea. Anyway this gets the programmer to think beyond the one program - add on new ideas in future, develop a market, and sell new ideas without reselling old ideas. Market cost are held down, copy pirating minimized with programmer-user communication.

REVIEWS: "TiMachine", also out of NovaSoft, is a basic to machine code compiler I promise to review beyond the initial comments I had time for two newsletters ago. Time has not slowed down for me. The newsletter takes so much of my spare time, for me to figure out how to use a piece of software, use it and then write about it, I would be several weeks behind in getting our newsletter out anywhere near on time. I copied the "Paint" program, modified it somewhat in the hopes of putting it thru the Timachine. Then I read the can and cannot do part of the documentation "ON ERR" statements are NOT supported, and Paint's author Mike Rhees uses it quite a bit. So back to the "drawing" board. But TiMachine is one way to go if you want to get into MC with little or no sweat'

NEWS: "SMART-TEXT", by Bill Jones, Gulf Micro Electronics, 1317 Stratford Ave, Panama City, FL 32404. Cost \$39.95 and available on cassette, 32 col. and OS 64 Versions, the Aerco and Oliger Disc drive, A&J Micro Drive, and the Tasman, Aerco, Oliger and A&J printer IF supported, specify version. This software reviewed in the Nov/Dec '85 Time Designs Magazine. TDM gets better and better as time goes by, if you enjoy your Sinclair machine, you'll enjoy Time Designs, for only \$15 a year/ 6 issues. Write to TDM, 29722 Hult Rd., Colton, OR 97017 Tel:503-824-2658

NEWS: SCLD every 2068 gotta have one- if yours goes then what ? The folks at the Capital Area TS Users Group (CATS) PO Box 725, Bladensburg, Md 20710 brought a whole bunch from Timex Portugal, and for \$20 each will sell you one. Discounts for larger or group purchases. Write for details.

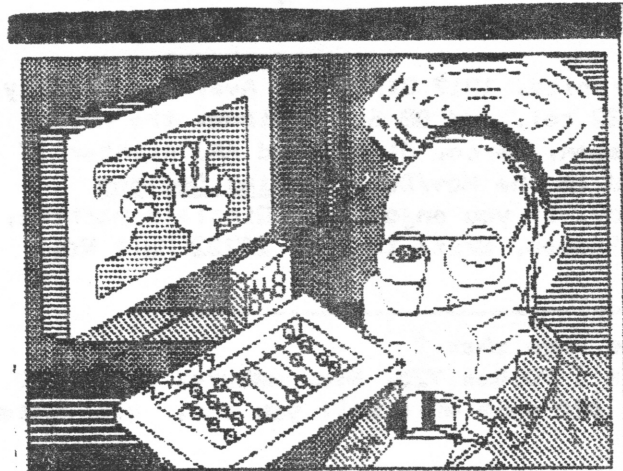
NEWS:--"Radio Computing Digest (RCD)"- is devoted to low-cost, license-free, wireless computer communications. Public Digital Radio Service (PDRS) coverage, and more. PDRS baud rate in excess of one million bps. RCD will show you how to set up a Digital Radio Station, BBSs and LANs. Both local and long distance links possible without Ma Bell. For a copy of the premier issue of RCD send three dollars to: R.L. Christensen, Box 916, Oroville, WA 98844.

NEWS: "2nd Annual Timex Sinclair Computerfest"-for details on this EVENT of the TB year! Write to Frank Davis, 513 East Main St., Peru IN 46970-sending a SASE probably wont hurt his feelings any. Any SINCUS people planning on attending let me know, maybe we can all meet at one location- as most of us havent meet-YET!

CLONE - - - -CLONE- - - -CLONE - - - -CLONE - - - -CLONE- - - -CLONE- -

Over a year after the release of CLONE to the public, we have received very few complaints regarding the operation of CLONE. Either a whole lot of people gave up and didn't believe we would try to help out any purchaser of CLONE, or there weren't any problems. One complaint was the CLONEd program wouldn't load, and all the user got was the Tape Error Report. It was determined that it is was too low a recorder level. Other recorders were tried and success! Not all recorders are created equal. And some wear out after several hundred hours of use. The second problem, was the user couldn't get the CLONE to transfer to disc or micro drive. It has NEVER been advertised as such. It takes hardware and software-see a NMI switch-to do that. CLONE has always been advertised as a tape back up utility. The Header Reader function, gives you the data necessary to make the switch from tape to drive. I use my copy of CLONE to copy tape swaps for members and from other groups. LOAD CLONE in the 2068, put the blank tape in one recorder and the program tape in the other, go to Last Resort option, turn on both recorders and let it go. With multi-jacks on the plugs a couple recordings can be made at the same time. For your copy of CLONE, send \$6, to 'SINCUS', 1229 Rhodes Rd., Johnson City, NY 13790. Postpaid.

Hi and welcome to new member Don Lambert, Cedar Rapids, IA, he writes looking for HELP for a ZX80 that has loose wires, cut traces and gives garbage on the screen, he needs a ZX80 schematic, photos or drawings so he can tell what he's got. He has the Operating manual. and was told it has both the 4K and 8K ROMs. Also on the outlook for instructions for the Memotech High Resolution Graphics module. Any help would be welcomed- I'll forward any and all help to Don as received. Thanks.



Sinclair's ZX-79 Prototype 1979

From our reliable news source in East Livershireshirehampton, England a photo of then Mr. Clive Sinclair and several prototypes of his future inventions. Note his digital watch on his wrist from his earlier watch kit days. While the photo is dated 1979, there is the fore runner of Flat Screen TV in the background, a working model of the ZX79 with a plug in .5K RAM pack in the fore. The spinner-beanie hat is a wind to dc power pack for the electric power skates (forerunner of the electric car) Skates on Clive's feet not in photo. The reason for his hand over his face is to prove hands in screen are not his, and the ZX79 works!!! We of course were not aware of many of Clive's earliest efforts but we do appreciate them!

VIENS: Just got a postcard from a user who heard of us, wants assurances that we wont disappear in the night, and a free sample to help make up his mind. I can understand some of what this guy must think, but sometimes I wish he and all others could realize that there are no guarantees in Life, so how can I give him one? And does the money we pay for stamps or paper grow on trees up here?? I haven't seen any. I suppose since once in awhile we get mention in national publications, we oughta expect it, but we gona have to raise dues to cover the freebies, maybe not this year but maybe soon. As for assurances or guarantees, if we do have to pull the plug, all members will be refunded any monies due, less the cost of refunding, ie stamps, a.o.'s and envelops etc. I hope we are here next year and for years to come, but we need some feedback from all of you reading this.

Updates

-By Wes Brzozowski

From time to time, I get reader feedback, more information, or notice something I've missed mentioning in a previous article. It's worth collecting such tidbits and presenting them as a group, as I'll do now.

-SINCUS LIGHT PEN-

(SINCUS NEWS Sep/Oct 1986)

I suggested the possibility of trying a Radio Shack phototransistor in this project, and requested that those trying it tell me how it works. Edward Radtke, of Louisville, KY has tried it, (part # 276-145) and it works fine. Thanks loads, Edward!!

-CAN WE TALK?-

(SINCUS NEWS Nov/Dec 1986)

"On Communicating Computers"

I neglected to mention that certain wires in an RS-232 link sometimes need to be swapped, in order to get things working. Some RS-232 ports are configured as Data Communication Equipment, and some as Data Terminal Equipment (DCE and DTE). The main difference is that the wires at some pins may need to be swapped, so that both devices don't try to "talk" on the same wire, causing conflict, and "listen" on the same wire, where no one is trying to talk. Since the Async card I use in my PC can be jumped to do either, I was able to use a "straight through" cable. Depending on the particular RS-232 parts you may use, you might instead have to swap the TX DATA and RX DATA lines, and swap CTS and DTR. Be sure to swap the wires at one connector only; if you do it at both, you will "unswap" the fix you just made!!

-TS2068 ROM DISASSEMBLY-

(Started last issue and continuing in this issue)

Starting in this issue, my listing will cover some of the ROM's uses of the Floating Point Calculator, a "second language" that lies hidden in the ROM. Since the calculator commands are FORTH-like in their use, I've used the equivalent words and symbols in the comment column that you would use if you were writing a similar program in the FORTH language. If you want to learn more about the calculator, there are several sources. If your user group library goes back far enough, you might check some old issues of SYNC (in it's second year, I think) for a series of articles on the floating point calculator in the ZX-81 (TS-1000). These are largely applicable to us. Also, I believe that an article in the short-lived TIMEX-SINCLAIR USER told about it. The article's title said something about FORTH, but the author spoke mostly about how the Floating Point Calculator works.

[-Ed notes: SYNC, Jul/Aug 1982, "Understanding Floating -Point Arithmetic", Part 3, page 43, by Dr. Ian S. Logan, 24, Nurses Lane, Skellingthorpe Lincoln, LN6 0TT, U.K. -parts 1,2 in earlier issues. (Other details of the routine in this article can be found in "Sinclair ZX-81 ROM Disassembly, Part B", Melbourne House, 1982, by Drs. Ian Logan and Frank O'Hara.)

TIMEX-SINCLAIR USER, Vol 1:84, page 42, "Setting FORTH", by Bill Payne. Author recommends in addition to above Logan book, also Part A, of the same title. Also "Starting FORTH" by Leo Brodie, Prentice-Hall, 1981 and FORTH Encyclopedia by Mitch Derick and Linda Baker, Mountain View Press, 1982.]

However, the best source may be found in a 5 part series in ZX-COMPUTING (a British magazine). Starting with the July 1986 issue, Toni Baker has been presenting a discourse on the Spectrum calculator, which is directly applicable to us. ZX-COMPUTING will take a VISA or Mastercard number for subscriptions (so you don't have to worry about exchanging your dollars for Sterling). They will also start your subscription with back issues if you request it, so you get the entire series on the calculator. Write them at INFONET LTD, Times House, 179 The Marlowes, Hemel Hempstead, Herts. HP1 1BB, England.

```

DISASSEMBLY
ADDRESS 4082 TO 411C
4082 210C00 *
4085 39 *
4088 368A *
4089 360B *
408B E7 *
408C CD1C11 *
408F DA4B0D *
4092 23 *
4093 23 *
4094 23 *
4095 7E *
4096 FE02 *
4098 207D *
409A 23 *
409B 4E *
409C 23 *
409D 46 *
409E ED433F40 *
40A2 23 *
40A3 4E *
40A4 23 *
40A5 46 *
40A6 23 *
40A7 ED433D40 *
40AB ED4B3F40 *
40AF AF *
40B0 323C40 *
40B3 E5 *
40B4 E5 *
40B5 ED5B3D40 *
40B9 19 *
40BA EB *
40BB E1 *
40BC CDDC40 *
40BF DCF240 *
40C2 EB *
40C3 0B *
40C4 78 *
40C5 B1 *
40C6 20EC *
40C8 E1 *
40C9 3A3C40 *
40CC A7 *
40CD C8 *
40CE ED4B3F40 *
40D2 0B *
40D3 ED433F40 *
40D7 78 *
40D8 B1 *
40D9 20D0 *
40DB C9 *
40DC E5 *
40DD D5 *
40DE C5 *
40DF ED4B3D40 *
40E3 1A *
40E4 96 *
40E5 2007 *
40E7 23 *
40E8 13 *
40E9 08 *
40EA 78 *
40EB B1 *
40EC 20F5 *
40EE C1 *
40EF D1 *
40F0 E1 *
40F1 C9 *
40F2 C5 *
40F3 D5 *
40F4 E5 *
40F5 ED4B3D40 *
40F9 ED5B1440 *
40FD EDB0 *
40FF D1 *
4100 D5 *
4101 ED4B3D40 *
4105 EDB0 *
4107 2A1440 *
410A ED4B3D40 *
410E EDB0 *
4110 323C40 *
4113 E1 *
4114 D1 *
4115 C1 *
4116 C9 *
4117 CF02 *
4119 0C *
411A 0C *
411B 0C *
411C 0C *
40E3 1A *
40E4 96 *
40E5 2007 *
40E7 23 *
40E8 13 *
40E9 08 *
40EA 78 *
40EB B1 *
40EC 20F5 *
40EE C1 *
40EF D1 *
40F0 E1 *
40F1 C9 *
40F2 C5 *
40F3 D5 *
40F4 E5 *
40F5 ED4B3D40 *
40F9 ED5B1440 *
40FD EDB0 *
40FF D1 *
4100 D5 *
4101 ED4B3D40 *
4105 EDB0 *
4107 2A1440 *
410A ED4B3D40 *
410E EDB0 *
4110 323C40 *
4113 E1 *
4114 D1 *
4115 C1 *
4116 C9 *
4117 CF02 *
4119 0C *
411A 0C *
411B 0C *
411C 0C *

```

```

50 REM 2 DIM ARRAY SORT "SORT2
10 PRINT " TO RELOCATE ARRAY 5
20 PRINT
30 PRINT TAB 8;"CHANGE",,TAB 3
;"ADDR DATA",,TAB 3
40 PRINT TAB 1;"START+3B" ST
ART+5A"
50 PRINT TAB 1;"START+3E" ST
ART+70"
60 PRINT
70 PRINT "START=START ADDRESS
OFROUTINE.
(USE HEX)"
80 PRINT AT 20,0;"PRESS ENTER"
90 IF INKEY$="" THEN GOTO 90
100 CLS
110 GOTO 1000
120 STOP
130 SAVE "SORT2"
140 GOTO 10
150 STOP
1000 REM ARRAY SORT DEMO
1010 LET SORT=16514
1020 DIM E$(10,15)
1030 FOR A=1 TO 10
1040 FOR B=1 TO 15
1050 LET E$(A,B)=CHR$(INT (RND*
26)+38)
1060 PRINT E$(A,B);
1070 NEXT B
1080 PRINT
1090 NEXT A
1100 PRINT "PRESS A KEY TO SOR
T"
1110 PAUSE 4E4
1120 PRINT USA SORT,E$
1130 CLS
1140 FOR A=1 TO 10
1150 PRINT E$(A)
1160 NEXT A

```

Here is Don Lamen's printout from his MC program MASP showing the code for "Sort", and also the Basic for "Sort". Sort was printed in a recent ZX Computing magazine. The addresses are in hex, and the start address is 16514

```

;*****
; DEEPING SECTION
;*****

```

```

;Deeper Routine. Enter with DE=number of cycles-1, HL=a value
; that varies with the time of 1 cycle
; Identical to Spectrum at 03B5

```

```

03F3 F3      BI
03F4 7D      LD A,L
03F5 C83D    SRL L
03F7 C83D    SRL L
03F9 2F      CPL
03FA E603    AND 003
03FC 4F      LD C,A
03FD 0600    LD B,000
03FF D8210F04 LD IX,TLOOP
0403 D809    ADD IX,BC
0405 3A483C  LD A,(BORDER) ;So we don't change border color
0408 E63D    AND 03D
040A 0F      BRCA
040B 0F      BRCA
040C 0F      BRCA
040D F608    BR 008 ;Border color in format for port FE

```

```

;Top of the timing loop for 1 cycle
040F 00      TLOOP NOP
0410 00      NOP
0411 00      NOP
0412 04      INC B
0413 0C      INC C

```

```

;Wait loop between half cycles
0414 08      L0414 DEC C
0415 20F9    JR NZ,L0414

```

```

0417 0E3F    LD C,03F
0419 05      DEC B
041A C21404  JP NZ,0414

```

```

041D EE10    XOR B10 ;Switch the "DEEP" bit
041F D3FE    OUT (DFE),A ;Ship it out
0421 44      LD B,H
0422 4F      LD C,A
0423 C867    BIT 4,A
0425 2009    JR NZ,L0430 ;if cycle only half done

```

```

;Here if a cycle is complete
0427 7A      LD A,B
0428 83      BR E
0429 2809    JR Z,L0434 ;if we're done with all our cycles

```

```

;Here if not. Update counters and loop again
042B 79      LD A,C
042C 4B      LD C,L
042D 1B      DEC DE
042E DDE9    JP (IX)

```

```

;Here if cycle only half done. Loop again
0430 4B      L0430 LD C,L
0431 0C      INC C
0432 DDE9    JP (IX)

```

```

0434 FB      L0434 EI
0435 C9      RET

```

```

;BEEP Handler
; Identical To Spectrum at 03F8

```

```

0436 EF      BEEP RST 028 ;Run FP Calculator. Two numbers are on
;the FP stack already; duration & pitch
0437 31      DEFB 031 ;DUP
0438 27      DEFB 027 ;INT
0439 C0      DEFB 0C0 ;STORE IN LOC 0
043A 03      DEFB 003 ;-
043B 34      DEFB 034 ;STACK IMMEDIATE
043C EC      DEFB 0EC ;These 3 bytes form the
; IMMEDIATE operand, a
043D 6C      DEFB 06C ; floating point number
043F 98      DEFB 098 ; of the value
043F 1F      DEFB 01F ; .0577622606
0440 F5      DEFB 0F5

```

```

0441 04      DEFB 004 ;
0442 A1      DEFB 0A1 ;1
0443 0F      DEFB 00F ;+
0444 38      DEFB 038 ;END
0445 21923C  LD HL,HEMBOU
0448 7E      LD A,(HL)
0449 A7      AND A
044A 205E    JR NZ,L04AA

```

```

044C 23      INC HL
044D 4E      LD C,(HL)
044E 23      INC HL
044F 46      LD B,(HL)
0450 78      LD A,B
0451 17      RLA
0452 9F      SBC A,A
0453 89      CP C
0454 2054    JR NZ,L04AA

```

```

0456 23      INC HL
0457 BE      CP (HL)
0458 2050    JR NZ,L04AA

```

```

045A 78      LD A,B
045B C63C  ADD A,03C
045D F26304 JP P,04463

```

```

0460 E2AA04  JP PD,044AA

```

```

0463 06FA    LD B,0FA
0465 04      L0465 INC B
0466 D60C    SUB 00C
0468 30FB    JR NC,L0465

```

```

046A C60C  ADD A,00C
046C C5      PUSH BC
046D 21AC04 LD HL,GENIT
0470 C0C537 CALL 037C5
0473 C07337 CALL 03773

```

```

0476 EF      RST 028 ;RUN The FP Calculator. FP Stack now
; has duration, pitch & .0577622606,
; and the value just stacked
;
0477 04      DEFB 004 ;
0478 38      DEFB 038 ;END

```

```

0479 F1      POP AF
047A 86      ADD A,(HL)
047B 77      LD (HL),A

```

```

047C EF      RST 028 ;RUN The FP Calculator. FP Stack
; already contains duration,frequency
;STORE LOC 0 ---the frequency
;DUP
047D C0      DEFB 0C0
047E 02      DEFB 002
047F 31      DEFB 031
0480 38      DEFB 038 ;END

```

```

0481 C01E1F CALL 01F1E ;Put value on calculator stack into A
0484 FE0B  CP 00B
0486 3022  JR NC,L04AA

```

```

0488 EF      RST 028 ;RUN The FP Calculator. FP Stack now
; has duration
;SET FROM LOC 0 --- the frequency
;
0489 E0      DEFB 0E0
048A 04      DEFB 004
048B E0      DEFB 0E0
048C 34      DEFB 034
048D 80      DEFB 080
048E 43      DEFB 043
048F 55      DEFB 055
0490 9F      DEFB 09F
0491 80      DEFB 080
0492 01      DEFB 001
0493 05      DEFB 005
0494 34      DEFB 034
0495 38      DEFB 038
0496 71      DEFB 071
0497 03      DEFB 003
0498 38      DEFB 038 ;END

```

```

;Address of semitone table
;Count A F.P. numbers into the table
;Put number on the calculator stack

```

```

;RUN The FP Calculator. FP Stack now
; has duration, pitch & .0577622606,
; and the value just stacked
;
;END

```

```

;RUN The FP Calculator. FP Stack
; already contains duration,frequency
;STORE LOC 0 ---the frequency
;DUP
;DUP
;END

```

```

;Put value on calculator stack into A

```

```

;RUN The FP Calculator. FP Stack now
; has duration
;SET FROM LOC 0 --- the frequency
;
;SET FROM LOC 0 --- the frequency
;STACK IMMEDIATE
;
;Only for Spectrum. Here
; the bit's a BUG!!! value should
; value
; instead be 441250, to
; compensate for TS2068's
; 437300 ;slightly faster clock
;SNAP
;/
;STACK IMMEDIATE
; the value
; 30.125
;-
;END

```

```

0499 CD231F CALL 01F23 ;Put value on calculator stack in BC
049C C5 PUSH BC
049D CD231F CALL 01F23 ;Put value on calculator stack in BC
04A0 E1 POP HL
04A1 50 LD D,B
04A2 59 LD E,C
04A3 7A LD A,D
04A4 83 OR E
04A5 C8 RET Z
04A6 1B DEC DE
04A7 C3F303 JP 003F3
  
```

```

04AA CF L04AA RST 8
04AB 0A DEFB 00A ;Error D: Integer Out Of Range

;Semitone Table. Contains the frequencies of the 12 semitones
; in the octave starting at middle C. All floating point
; numbers in 5-byte format
; Identical to Spectrum at 044E
  
```

```

04AC 89 DEFB 089 ;
04AD 02 DEFB 002 ; 261.63 Hz
04AE D0 DEFB 0D0 ;
04AF 12 DEFB 012 ; = C
04B0 86 DEFB 086 ;

04B1 89 DEFB 089 ;
04B2 0A DEFB 00A ; 277.18 Hz
04B3 97 DEFB 097 ;
04B4 60 DEFB 060 ; = C#
04B5 75 DEFB 075 ;

04B6 89 DEFB 089 ;
04B7 12 DEFB 012 ; 293.66 Hz
04B8 D3 DEFB 0D3 ;
04B9 17 DEFB 017 ; = D
04BA 1F DEFB 01F ;

04BB 89 DEFB 089 ;
04BC 1B DEFB 01B ; 311.13 Hz
04BD 90 DEFB 090 ;
04BE 41 DEFB 041 ; = D#
04BF 02 DEFB 002 ;

04C0 89 DEFB 089 ;
04C1 24 DEFB 024 ; 329.63 Hz
04C2 86 DEFB 086 ;
04C3 53 DEFB 053 ; = E
04C4 CA DEFB 0CA ;

04C5 89 DEFB 089 ;
04C6 2E DEFB 02E ; 349.23 Hz
04C7 99 DEFB 099 ;
04C8 36 DEFB 036 ; = F
04C9 D1 DEFB 0D1 ;

04CA 89 DEFB 089 ;
04CB 30 DEFB 030 ; 369.99 Hz
04CC FF DEFB 0FF ;
04CD 49 DEFB 049 ; = F#
04CE 3E DEFB 03E ;

04CB 89 DEFB 089 ;
04D0 43 DEFB 043 ; 392 Hz
04D1 FF DEFB 0FF ;
04D2 6A DEFB 06A ; = G
04D3 73 DEFB 073 ;

04D4 89 DEFB 089 ;
04D5 4F DEFB 04F ; 415.30 Hz
04D6 A7 DEFB 0A7 ;
04D7 00 DEFB 000 ; = G#
04D8 54 DEFB 054 ;
  
```

```

04D9 89 DEFB 089 ;
04DA 3C DEFB 03C ; 440 Hz
04DB 00 DEFB 000 ;
04DC 00 DEFB 000 ; = A
04DD 00 DEFB 000 ;

04DE 89 DEFB 089 ;
04DF 69 DEFB 069 ; 466.16 Hz
04E0 14 DEFB 014 ;
04E1 F6 DEFB 0F6 ; = A#
04E2 24 DEFB 024 ;

04E3 89 DEFB 089 ;
04E4 76 DEFB 076 ; 493.88 Hz
04E5 F1 DEFB 0F1 ;
04E6 10 DEFB 010 ; = B
04E7 05 DEFB 005 ;
  
```

```

;This routine isn't used by the ROM. It's probably a debug
; routine left in by the programmers. It evaluates a BASIC
; string expression & sets the MSD of the last character of the
; string. (This allows it to be used by the Message Printer
; routine.)
; This has no comparable Spectrum Routine
  
```

```

04E8 CD3428 CALL 02854 ;Evaluate next expression per CH_ADD
04E9 3A3D5C LD A,(FLASB)
04EA 87 ADD A,A
04EB FAED18 JP N,01DED ;Syntax error, if it's a numeric expr.
04EC E1 POP HL
04ED D0 RET NC ;Return if only checking syntax
04EE E3 PUSH HL
04EF CDAF2F CALL 02FAF ;POP string specs into A/B/C/D/E regs.
04F0 62 LD H,D
04F1 68 LD L,E
04F2 0B DEC C ;Start address of the string
04F3 FB RET N ;Assumes string length <255 chars
04F4 09 ADD HL,BC ;Returns if string length = 0
04F5 CBFE SET 7,(HL) ;HL=Address of last character
04F6 C9 RET ;Set MSD of last character
  
```

```

;8 Section for Printing To Screen and Printer &
;Print the character in the A register into the current channel
; Similar to Spectrum at 01F4
  
```

```

0500 C31A06 CALL 0061A ;Set the current PRINT position
0501 FE20 CP 020 ;ASCII space character. All characters
0502 02F005 JP NC,005F0 ; equal or larger are printable, so JP

0508 FE0C CP 00C ;This has been added by Timo
0509 2007 JR NZ,LO513 ; JUMP if it's a DELETE character
050A F0C00166 BIT 4,(IY+1) ;FLAG; new bit not used by Spectrum,
050B CAF005 JP Z,005F0 ; it's zero if we're in K mode

0513 FE06 L0513 CP 006 ;if its value is less than 6, then
0514 3869 JR C,L0580 ; print a "?"

0517 FE18 CP 018 ;This prints a "?" if it's in the
0518 3065 JR NC,L0580 ; range 18 - 1F

0519 212205 LD HL,00322 ;Compute the address of the routine
051A 5F LD E,A ; to handle a PRINT control code
051B 1600 LD D,000 ; (from 06 - 17)
051C 19 ADD HL,DE
051D 5E LD E,(HL)
051E 19 ADD HL,DE
051F E5 PUSH HL ;a RET will cause a "JP" to the code
0520 C31A06 JP 0061A ;Set current PRINT position & "JP"
  
```


;Displacement table for control characters. Add the displacement
; to the address of the displacement byte to find the address of
; the handler routine.
; Identical to Spectrum at 0A11

```

0528 4E      DEFB 04E ;PRINT comma displacement
0529 57      DEFB 057 ;EDIT
052A 10      DEFB 010 ;cur left
052B 29      DEFB 029 ;cur right
052C 54      DEFB 054 ;cur down
052D 53      DEFB 053 ;cur up
052E 52      DEFB 052 ;DELETE
052F 37      DEFB 037 ;ENTER
0530 50      DEFB 050 ;unused -- to an error routine
0531 4F      DEFB 04F ; same thing here
0532 3F      DEFB 03F ;INK control
0533 5E      DEFB 05E ;PAPER control
0534 5D      DEFB 05D ;FLASH control
0535 5C      DEFB 05C ;BRIGHT control
0536 58      DEFB 058 ;INVERSE control
0537 5A      DEFB 05A ;OVER control
0538 54      DEFB 054 ;AT control
0539 53      DEFB 053 ;TAB control
    
```

;Move the cursor left one character. Corrects a bug in the
; Spectrum code.
; Similar to Spectrum at 0A23

```

053A 0C      INC C
053B 3E22    LD A,022
053D 09      CP C
053E 2011    JR NZ,L0551
    
```

```

0540 FDC014E BIT 1,(IY+1) ;FLAGS - Printer/Screen
0544 2009    JR NZ,L054F ;if printer
    
```

```

0546 04      INC B
0547 0E02    LD C,002
0549 3E19    LD A,019 ;Times corrected a bug in Spectrum ROM
054B 08      CP B
054C 2003    JR NZ,L0551
    
```

```

054E 05      DEC B
054F 0E21    LOS4F LD C,021
0551 C31409  L0551 JP 00914 ;Get address of first character byte
    
```

;Move the cursor right one character
; Identical to Spectrum at 0A3D

```

0554 3A915C  LD A,(P_FLAG) ;Keep old value
0557 03      PUSH AF
0558 FD345701 LD (IY+07),001 ;P_FLAG - OVER 1
055C 3E20    LD A,020 ;ASCII space
055E CDF005  CALL 005F0 ;PRINTs the space
0561 01      POP AF
0562 32915C  LD (P_FLAG),A ;Restore old value
0565 09      RET
    
```

;Handle an ENTER character
; Identical to Spectrum at 0A4F

```

0566 FDC014E BIT 1,(IY+1) ;FLAGS - Printer/Screen
056A C2230A  JP NZ,0A023 ;if printer

056B 0E21    LD C,021
056F CD9007  CALL 00790 ;Will scroll, if needed
0572 05      DEC B
0573 C31409  JP 00914 ;Get address of first character byte
    
```

;Handle a PRINT comma by shifting to the next print zone
; Identical to Spectrum at 0A5F

```

0576 CD1A06  CALL 0061A ;Gets current PRINT position (AGAIN!)
0579 79      LD A,C
057A 30      DEC A
057B 30      DEC A
057C EA10    AND 010
057E 105A    JR L05DA ;To TAB over the right number of spaces
    
```

;Handle an unprintable character by substituting a "?"
; Identical to Spectrum at 0A69

```

0580 3E3F    L0580 LD A,"?" ;Change unprintable character
0582 106C    JR L05F0 ;Print the question mark
    
```

;Handle the control characters that require "follow up" info
; Characters include INK -- OVER
; Identical to Spectrum at 0A6B

```

0584 119E05  LD DE,0059E ;Code address - after we've gotten
; the "follow up" byte(s)
0587 320F5C  LD (TVDATA + 1),A ;Save it, till we need it
058A 180B    JR L0597 ;Change current channel output to DE
    
```

;Here for AT & TAB

```

058C 118405  LD DE,00584 ;Temp current channel output
058F 1803    JR L0594 ;Save "follow up" & change channel
    
```

;Here for INK - OVER

```

0591 119E05  LD DE,0059E ;Temp current channel output
0594 320E5C  L0594 LD (TVDATA),A ;Save the "follow up" byte
0597 2A315C  L0597 LD HL,(CURCHL) ;Change channel
059A 73      LD (HL),E
059B 23      INC HL
059C 72      LD (HL),D
059D 09      RET
    
```

;Only after all "follow up" bytes are in, do we end up here,
; through the current channel output

```

059E 110005  LD DE,00500 ;The original current channel output
05A1 CD9705  CALL 00597 ;We can restore it now
05A4 2A0E5C  LD HL,(TVDATA) ;Get the "follow up" byte(s)
05A7 57      LD D,A
05A8 7D      LD A,L
05A9 FE16    CP 016
05AB DAB023  JP C,0230B ;if it's INK - OVER
    
```

```

05AE 2029    JR NZ,L05D9 ;if it's TAB
    
```

```

05B0 44      LD B,H ;Here for AT
    
```

```

05B1 4A      LD C,D
05B2 3E1F    LD A,01F
05B4 91      SUB C ;Internal column notation is backwards
05B5 380C    JR C,L05C3
    
```

```

05B7 C602    ADD A,002
05B9 4F      LD C,A
05BA FDC014E BIT 1,(IY+1) ;FLAGS - Printer/Screen
05BE 2016    JR NZ,L05D6 ;if printer
    
```

```

05C0 3E16    LD A,016
05C2 90      SUB B ;Internal line numbers are backwards
05C3 DA291F  L05C3 JP C,01F29 ;if integer out of range
    
```

```

05C4 3C      INC A
05C7 47      LD B,A
05C8 04      INC B
05C9 FDC0246  BIT 0,(IY+2) ;TV_FLAG - Lower screen
05CD C29007  JP NZ,00790 ;if lower screen-may need scrolling
    
```

```

05D0 FDBE31  CP (IY+49) ;DF 52
05D3 DAC107  JP C,007C1 ;if Out of screen, print error msg
05D6 C31409  L05D6 JP 00914 ;Get address of first character byte
    
```

;Here for a TAB character

```

05D9 7C      L05D9 LD A,H
05DA CD1A06  L05DA CALL 0061A ;Get current PRINT position
05DB 01      AND A,C
05DE 30      DEC A
05DF EA1F    AND 01F ;Number of spaces to PRINT
05E1 08      RET Z ;if number is 0
    
```

```

05E2 57      LD B,A
05E3 FDC01C6 L05E3 SET 0,(IY+1) ;FLAGS - Suppress leading space
    
```

```

05E7 3E20 L05E7 LD A,820 ;ASCII space
05E9 C07607 CALL 80776 ;Prints one space character
05EC 15 DEC B
05ED 20FB JR NZ,L05E7 ;Loop to PRINT proper number of spaces

05EF C9 RET

;Handle printable characters
; Identical to Spectrum at 0AD9

05F0 C03D06 L05F0 CALL 8063B ;Print character & update position

;Save the present line/column position
; Identical to Spectrum at 0ADC

05F3 FDC8014E BIT 1,(IY+1) ;FLAG - Printer/Screen
05F7 201A JR NZ,L0613 ;if printer

05F9 FDC80246 BIT 0,(IY+2) ;TV_FLAG - Lower Screen
05FB 2008 JR NZ,L0607 ;if lower screen

05FF ED43885C LD (S_POSN),BC ;Save Upper screen info
0603 22845C LD (DF_CC),HL
0606 C9 RET

0607 ED43845C L0607 LD (S_POSN),BC ;Save lower screen info
0608 ED43825C LD (ECHO_E),BC
060F 22845C LD (DFCCL),HL
0612 C9 RET

0613 FB7145 L0613 LD (IY+69),C ;P_POSN - Save printer info
0616 22805C LD (IPR_CC),HL
0619 C9 RET

;Get present line/column position
; Identical to Spectrum at 0B03

061A FDC8014E BIT 1,(IY+1) ;FLAG - Printer/Screen
061E 2014 JR NZ,L0634 ;if printer

0620 ED48885C LD BC,(S_POSN) ;Get upper screen info
0624 2A845C LD HL,(CF_CC)
0627 FDC80246 BIT 0,(IY+2) ;TV_FLAG - Upper/Lower Screen
062B C8 RET Z ;if it's Upper Screen

062C ED48845C LD BC,(S_POSN) ;Well then, get lower screen info
0630 2A845C LD HL,(DFCCL)
0633 C9 RET

0634 FM4E45 L0634 LD C,(IY+69) ;P_POSN - Get printer info
0637 2A805C LD HL,(IPR_CC)
063A C9 RET

;Here for all characters that put junk on the screen
; -Normal characters, tokens, graphics, & UDG's. Contains
; additions for non-Spectrum characters
; Similar to Spectrum at 0B24

063B FE0C CP 80C ;DELETE
063D 2004 JR NZ,L0643

063F 3E7A LD A,87A ;z - the special characters follow this
0641 1851 JR L0694

0643 FE7C L0643 CP 87C ;STICK
0645 2848 JR Z,L0694

0647 FE7E CP 87E ;FREE
0649 2849 JR Z,L0694

064B FE7B CP 87B ;ON ERR
064D 380A JR C,L0659

064F FE80 CP 880 ;Next 4 instructions added for DELETE
0651 3066 JR NC,L0659
0653 FDC80166 BIT 4,(IY+1) ;FLAG - New flag bit
0657 2838 JR Z,L0694

;Here's where the Spectrum version starts
; This part is identical to Spectrum at 0B24

0659 FE80 L0659 CP 880 ;Highest value for a "regular" char
065B 383D JR C,L069A ;if it's a regular, single character

065D FE90 CP 890 ;Lowest value for a UDG character
065F 3026 JR NC,L0687 ;For User Defined Graphics & Tokens

0661 47 LD B,A ;Here for Coarse Graphic Characters
0662 C0AD06 CALL 8066D ;Build the graphic character
0665 C01A06 CALL 8061A ;Get back the current position
0668 11925C LD DE,HEMBOY ;Graphic was built in calculator memory
066B 1847 JR L0684 ;Print it out

;Build the coarse graphic characters (80-8F) on the fly
; Identical to Spectrum at 0B38

066D 21925C LD HL,HEMBOY ;Calculator's memory area
0670 C07306 CALL 80673 ;Causes the following code to run twice

0673 C818 RR B ;Logical contortions to "build" the
0675 9F SBC A,A ; Coarse Graphics, without having to
0676 E60F AND 80F ; waste the 128 bytes needed to store
0678 4F LD C,A ; their pixel patterns
0679 C818 RR B
067B 9F SBC A,A
067C E6F0 AND 8F0
067E 01 OR C
067F 0E04 LD C,804

0681 77 L0681 LD (HL),A
0682 23 INC HL
0683 0B DEC C
0684 20FB JR NZ,L0681

0686 C9 RET

;Now find out whether it's a UDG or a Token
; Identical to Spectrum at 0B52

0687 D6A5 L0687 SUB 8A5 ;The lowest Token value
0689 3009 JR NC,L0694 ;if it's a token

068B C615 ADD A,815 ;Shift UDG values so UDG(a)=0, etc
068D E5 PUSH BC
068E ED48785C LD BC,(UDG) ;Base address of UDG area
0692 180B JR L069F ;To where the UDG gets printed

0694 C04507 L0694 CALL 80745 ;Expand token into ASCII, & print it
0697 C31A06 JP 8061A ;Sets current print position

069A C5 L069A PUSH BC ;For regular characters
069B ED48365C LD BC,(CHARS) ;Base address - regular character table

069F EB L069F EX DE,HL
06A0 21385C LD HL,FLAGS
06A3 C886 RES 0,(HL) ;For a leading space
06A5 FE20 CP 820 ;An ASCII space
06A7 2002 JR NZ,L06AB ;if it's not a space

06A9 C8C6 SET 0,(HL) ;NO leading space if it already is one

06AB 2600 L06AB LD H,800 ;Figure out the address of the 8
06AD 6F LD L,A ; byte pixel pattern for the character
06AE 29 ADD HL,HL
06AF 29 ADD HL,HL
06B0 29 ADD HL,HL
06B1 09 ADD HL,BC
06B2 C1 POP BC
06B3 EB EX DE,HL

```

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I. The Big Picture

C'mon, it's EAST!

I honestly don't know why there seems to be such a mystery surrounding the use of telecommunications. It's hard to find words to describe the wealth of information, experience and free software out there waiting to be tapped. For example, have you ever spent hours or days trying to solve a problem, only to discover 6 months later that someone else has solved it a year previous? If only you'd know!

The electronic forum can act as a "Round Table" for the ZX/TS/QL community. As owners of limited edition computers, we're very dependent on each other for mutual support. If you take the time to read and understand the information in this document, you should be able to sign on a remote database system, read and write messages, perhaps make some file transfers, and do whatever else the system offers. You will be safe in knowing you are doing all of this without making any serious mistakes, such as accidentally accessing the M.O.R.A.D. computer and launching a flock of IC 81's toward Russia. (Incidentally, recent motion pictures notwithstanding, there is no way you or anyone else could break into the defense department's missile launching system by mistake. They aren't even tied to standard phone lines.)

I've encountered three major reasons from people as to why they don't make more use of their modems.

1) "It's just a bunch of kids!". While it's true that there are a large percentage of young people with modems out there, there are also a number who aren't young and who daily carry on very mature conversation and share invaluable information. If you randomly choose two or three boards to call, the odds are good you may find young people pursuing their own form of entertainment. But nearly every board described in this guide is not in that category. In ANY city of the United States you can find intelligent exchange if you are willing to look for it. And even those "kids" may turn out to know three times more about machine code than yourself!

2) "It's too difficult. I always mess up!". If you take a modem and terminal software out of the box and look it up, it may not be totally obvious how it all works. Even those of us who've been using modems for years can always learn something new. That's part of the fun of it. But nowadays there are some good guides and manuals to go with the software and hardware available. It is partly to address this confusion that this guide was written. It really is easy, friends, but if you miss ONE KEYSTONE, just like with most software, it's not gonna work. For those working with MTERM II, we strongly recommend Barry Carter's Manual, available from most T/S retailers or from Parry (See Appendix C). But by far the surest way is to get someone who is experienced to take you through it step by step. Then, if you have questions, you can ask them. This "hands-on" approach works wonders. It would make an excellent demo for a User Group Meeting.

A lot of T/S folk try the 2 local boards, find the younger people and give up locally, then go straight to a Long Distance call and, not being familiar with either the modem or the Software, make an error and get upset since they spent money on the call for apparently nothing. Some give up at this point and put their modems away. What a tragedy! One of the best ways to learn about your system is to call the local boards. Check with members of your user group for numbers or call a local Computer Store.

3) "It's too expensive!". It's true that Long Distance Calling is not cheap. But there are a variety of ways to DRAMATICALLY reduce the cost. The first step is to get a Third Party Long Distance Service such as SPRINT or MCI. This will save you money right off the bat and costs nothing to begin the service. The next big break we've gotten recently has been the expansion of P.C. Pursuit. What is PC PURSUIT? Ed Grey has made extensive use of this service, I'll let him describe it:

"PC Pursuit is a service provided by GTE Telenet (a US SPRINT company) that allows economical long distance DATA (only telecommunications, unlimited off peak hours use of this service only costs \$25.00 monthly. From practically anywhere in the U.S. you can call to 14 major cities and connect with other computers set up to handle remote access. This includes direct links with other computer users, accessing data bases or just other public access BBS. The service works well except for delays in connecting with most cities occasionally). This is caused by too many users overloading the PC PURSUIT system. They are aware of (and expanding) the network to accommodate the additional users. Considering the price of traditional long distance services, I think that PC Pursuit is a bargain. You can get additional info on PC Pursuit by calling their 800 number (See Appendix C) both modem and voice. Both calls are free, and at that price, why not check it out."

As I mentioned, this system recently expanded. It formerly was only useable by those who lived in the 14 major metropolitan areas. Now it's available to anyone in over 17,000 exchanges.

The next big break for us Long Distance Telecommunicators has been the availability of 1200 P.P.S. software and hardware. These are covered extensively in this manual, but I'll force it to say that an XMODEM download at 1200 BPS takes 1/8 the time of a HEX download

For a time, those with a 2068 HD no modem, but finally Byteback came out with theirs, and Westridge decided to go ahead with the TS 2050. But recent developments allow us to use ANY RS232C modem, including 1200 BPS. Read on!

We cover all the combinations here:

ZX-81/TS1000/TS1500 Modems

- 1 Westridge 2050
- 2 Byte Back MD-2

TS2068

- 1 Westridge 2050
- 2 Byte Back MD68
- 3 Avatex 1200 using Z-SI/O option

ZX-81/TS1000/TS1500 Modems

WESTRIDGE 2050

Direct Connect modem, requires separate power supply. One LED to signal "connection made". Auto dial/Auto answer (With MTERM I) has no buffer or download capability. But with MINI-XMODEM software has XMODEM protocol. (See section on terminal software). Can be modified in several ways to achieve RS232C connection. (See APPENDIX D). The most widely used modem for the 1000/1500. No support from Westridge.

BYTE BACK MD-2

Direct Connect. Draws power from the 1000/1500. No LED. No Auto Dial. No Auto Answer. Comes supplied with Z-Com term program which allows uploads/downloads, in protocol specific to this software. One MD-2 could send to another MD-2. Includes 9 page manual. Also a version of MINI-XMODEM for this modem which would allow XMODEM protocol. Excellent product support by BYTE-BACK (See APPENDIX C). Comes with a socket to which an RS-232 connector could be attached, thus enabling it to drive a Printer, plotter, Etc. As a modem, it is limited to 300 BAUD since it is a Bell 103 standard FSK set-up. But when using the RS-232 C interface, any standard speed up to 9,600 BPS can be achieved. Some simple packages others require small hardware adjustments. (for more information, see APPENDIX D). Also available in KIT form.

TS 2068 Modems

WESTRIDGE 2050

Direct Connect, requires separate power supply. With MTERM II (Not the only choice), supports Auto Answer, Auto Dial with one LED for "Carrier Detect" 300 BPS only. 27+k buffer can perform uploads/downloads in ASCII or HEX, but requires additional Utility for XMODEM i.e. Loader V. Also 2 other complete term programs for this modem, Zterm 64 and Specterm 64. Both use XMODEM (See section VI. Terminal Software).

BYTE-BACK MD-68

Direct Connect, Separate power supply Using Spectraterm 1.3 (which comes with Modem). Has Auto Answer no Auto dial, No LED. 9 page manual. Includes schematic & parts list. Byte-Back provides support by phone. (See APPENDIX C) Also includes RS-232 socket like MD-2. Has 2K+k buffer in "REM" statements. Term program cannot be loaded without modem connected. For more information on RS-232 port, see APPENDIX D.

AVATEX 1200 with Z-SI/O option

Direct Connect, separate power supply. Auto dial/Auto answer, mostly Hayes Compatible can run at 300 or 1200 Bits Per Second, there is a switch for this. Has a LEH's for Power On, sending carrier, detecting carrier, and connection made. Can only be set to answer on the first ring. Includes 2 year warranties. Connects to computer via standard RS232c connector. For the 2068, you need either the Z-SI/O card or the AERCO RS-232 Interface. For a description of these, see APPENDIX D. The Byte-Back RS232 will not work, nor the RS232 modifications on the 2050 boards, as they are Bell 103 standard. Comes with good manual. Currently very reasonably priced.

One thing other computer owners have always had which we in the 1/1 community have finally arrived.
 To actually access an on line system requires surprisingly little in the way of software. But as you add features a buffer, upload/download, it gets a bit more complicated. The simplest examples of Terminal software are the Z-Com and Mterm 1, both for the 1000. The former, Z-Com does allow for downloads, but only if those downloads have been uploaded using Z-Com. Mterm 1 has no download capability.

Terminal Programs Described

- 151000 / Z801
- Z-Com (For the Byte-Back MD-2)
- Mterm 1 (For the Westridge 2050)
- Mini-Mod (For either of the above)
- 152068
- Mterm 11 (For Westridge 2050)
- Spectraterm 1.3 (For Byte-Back MD-68)
- Zterm 64 (For Westridge 2050)
- Specterm 64 (For Westridge 2050 or any RS232 modem)
- Modem753 (For Westridge 2050 or any RS232 modem)

Q
 Q. Term. (Nearly any modem)
 QCode (Most standard modems)

151000/Z801/151500 Terminal Software

Z-Com

No versions exist, a 2k version and a 16/64k version. The latter has a buffer which is capable of saving 60 screens of text with 64k ramdisk (approximately 48K). It is also capable of Download and Upload, but it can only download it's own files. Z-Com downloads are only available on Compuserve, as far as we know. 300 B.P.S. only, has a limited continuous print function, and supports both the TS2040 printer or a standard 80 Col. printer. Includes a 12 page manual. Phone support from Byte-Back (See Appendix C)

Mterm 1

This is the terminal software which accompanies the purchase of the original Westridge 2050 modem. The program comes in both 2050 and 1000 versions on each tape. The program is a basic terminal emulation program. No file transfer protocol is provided or supported. There is no capture buffer. Features include: Autodial (no dialing directory, though) / Autoanswer. Setup parameter options, (i.e. bits, parity, word size, duplex, etc.) and a print screen option of what is currently on the display to a TS 2040 printer.

Mini-Mod Description by Ed Grey

This is a terminal program for the 151000 (1500, Z801) series of computers. It comes with 2 versions on the tape, one for 16k and the second for 64k of additional ram. When ordering you must specify whether you are using the KC2050 or the Byte-Back modem. The terminal program is VERY DIFFICULT and UNFRIENDLY to use and I cannot recommend it's use for that purpose. On the other hand, the XMODEM file transfer capabilities work easily for that reason. It's a MUST for the serious 1000 user. With MIRM XMODEM, you can send or receive any 1000 BASIC program. The only requirement is the other system must support XMODEM

152068 Terminal Software

Mterm 11 or Smart Term 11

Auto answer/Autodial with dialing directory of up to 16 phone numbers. 0 macros available with up to 53 characters/macro. 300 B.P.S. only, 32 Column display. Capable of Downloading/Uploading in No-error checking ASCII, HEX, and REN conversions. Also capable of XMODEM using additional Loader utility file (See Downloaded section). Includes buffer of 27,256 bytes. Also capable of continuous printing of incoming data using Screenwriter's AERCO Centronic interface patch and to a Tasmn interface (See Appendix B). It is also possible to send Mscript or Tasmn files using this program (See Manipulating Buffer saves with word processors). It is possible to save a version of this program including the dialing directory and macro settings, etc. Long considered to be the one & only software to use, and still to be used as a comparison to the new programs. Those who have tried to modify it say that it's layout is very difficult to follow (it's all in machine code) For the best description of this program see Barry Cartwright's Manual

APPENDIX C Addresses & Phone #s of Vendors and Suppliers/Cosyshops

(In no particular order. sorry...)

- Byte-Back Company
Rt 3 Bx 147
Brodie Rd.
Leesville, SC 29070
Technical help 7-9pm (EST)
803-532-5812
- Grey and Clifford Computer Prod
P.O. Bx 2186
Inglewood CA 90305
(213) 759-7406 or
(213) 516-6648 After 6pm
Pacific Time
- Zebra System
78-06 Jamaica Ave
Johdhaven, NY 11421
- E. Arthur Brown
1404 Painece Dr
Alexandria, VA 22304
- Berry Carter
Bx 614
Warren, MI 48090
- Randy A Lucy Gordon
c/o Cincinnati TSMG
Cincinnati, OH 45218
- MCI MAIL
Bx 1001
1900 N Street, N.W.
Washington, D.C. 20036
800-624-2255 or AP M-TH
- G. Russell
Rd 1 Bx 530
Centre Hill, PA 16829
- Tony Gomez
2013 Los Feliz St
Thousand Oaks, CA 91362
- Joe Newman
Variety Sales
325 New Jersey St 20
Elizabeth, N.J. 07202
- STARTEX
P.O. Box 4870
Ft. Worth, TX 76101
571-811-877-1041
- Telecommunications User Group
P.O. Box 43254
Seattle, WA 98145-0254
Monthly Journal \$12/yr
U.S. \$85
- Byte-Casby
25 Battle Creek Court
St. Paul, MN 55119
- AERCO
PO Box 18093
Austin TX 78760
(512) 451-5874
- Carry Computer
5344 N. Danff
Glendale, AZ 85306
- Sunset Electronics
2254 TARAVAL St.
San Francisco, CA 94116
(415) 665-8330
- Compuserve Information Service Div
P.O. Box 20212
5000 Arlington Centre Blvd.
Columbus, OH 43220
1-(800) 848-8199 8:30am-9:30pm EST
- Wynn Corp.
808 5900
Ballingham, W 92227-5900
- PC PURSUIT
GTE Telemet Communications Corp
12490 Sunrise Valley Drive
Reston VA 22090
800-368-4215 (voice) 8-5 EST (M-F)
800-835-3005 (888 S 24th St.)
- Rich Moldovan
7414 E. Cuernavaca St
Tucson, AZ 85708
(602) 294-8109
- Diamond Design Computer Systems
Stormway
Isle of Lewis PA87-2QH
Scotland
- Richard Keisch
Membran Computer Hardware
& Software
12244 Winter Garden Dr
Lakeville, CA 92040
- The SOURCE
Dept. H60
1616 Anderson Rd
McLean, VA 22102
800-336-3366 (voice) 24 hrs
thint
- Norm Lehfeldt
757 Guerrero Street
San Francisco, CA 94110
(415) 285-0643
- Modem753 term prog
RP/M, Disc Drive
1/F, and RS232 1/F
- Loader's software
- Modem, Avetex 1200
Letter-writer/Buffer-
writer, Hacker's II
Handbook, QCODE, &
Q. Hardware & Software
- 2050 modems,
Term Programs
- 2050 modems,
Term Programs
- Mini-Mod software
- Q. TERM Author
Q. TERM Author
Modem for Q.)
- Micron 885
Software
- SPIFFY 885-
software &
512k ram expansion for the 2068

The REAL Beginner's Guide to Modeming on a TS2068

Lesson 2 Getting on a BBS
by P. Hill, RBMU*

A step by step road map of how to get your computer in sync with thousands of other TS users.

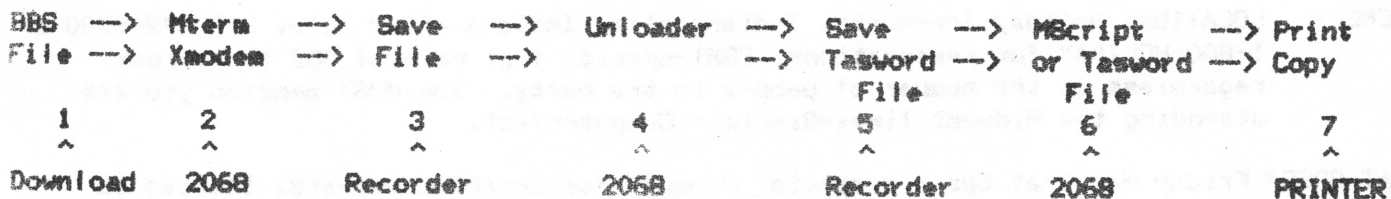
1. Get a modem (a 2050 type is used by this writer and so will be the only one I am talking about)
 2. Get Mterm II software
 3. Get Loader V from Kurt Casby (see address page 12)
 4. Modify as per instructions Loader V. READ the documentation. Set up on one or two local BBS for which you already know the telecommunication parameters, like B,N,I or whatever. Use voice numbers of SYSOPS (the guy who runs the BBS) or contact a modem user for such data. 99% of modem users are always ready to help.
 5. a) LOAD in the working copy of Loader V
b) Select item #2 on the MAIN MENU, 'the Dialing Menu'.
 6. <CONNECT THE PHONE>
 7. a) Select the letter of your choice and <ENTER>. Your software is an auto repeat dialer and will keep trying until a connection is made. BREAK will get you back to MAIN MENU.
b) If you have the wrong number or wrong time of day (many BBS do not operate 24 hours a day), any answering phone, causes the modem to buzz a connect signal, the Loader V switches to Mterm II, and you <ENTER> TWO times, a message; "Connection Lost" will greet you. Double check your times and numbers!
c) If you have the right number and the BBS answers, the modem will buzz a connect signal, the Loader V switches to Mterm II, and you <ENTER> TWO times, and now you are in the TERMINAL Mode.
 8. a) On TUBBS the BBS identifies itself, then asks if you want color graphics (C/R=No)[C/R is Carriage Return on many other types of computers, use <ENTER> on the good ole 2068.]
b) Log on procedures rarely hurt, on TUBBS and many others you will be asked for your name and city of residence. Use your real name, someday you may forget your 'handle' and then you'll look pretty funny. You will be asked for a PASSWORD. You make it up, do it ahead of time. Usually 10 characters is the maximum, but 5 is fine for me. Write it down, because if you forget, well...
c) After log on, it's the something everytime you use the BBS, only next time you'll be on file, will come the mailbag. If you leave messages (MSG), perhaps next time there will be mail for you. If you have a 2040 printer, you can screen print any time, just CONTROL (#8 and CAPS SHIFT) gets you the menu across the bottom of your screen. P for Printer, and you have the screen printed out.
d) A better method of saving data from the BBS is to CONTROL B, M for Menu, D for Buffer Menu, E to Erase Buffer, B to open Buffer (if CLOSED), <ENTER> back to terminal mode (2 times). Now all up to 27K of data will be retained in the buffer.
e) Go through the different menus, H will usually bring back a Main Menu. R usually gets into Reading mail. After 15 minutes, or so, G for Goodbye. Dont just pull the wire out or shut off the computer, the BBS may not know you hung up, and this may delay others from using the BBS.
f) You can save the buffer data; CONTROL B, M for Menu, look for BUFUSD, to see how many bytes are to be saved. E to exit to BASIC. Ready a tape, SAVE "name" CODE 26710, # of bytes. Run it through Unloader, enter to MScript or Tasword for printout. You dont have to do all this for what you saved, but it is good practice for the next lesson.
 9. Once you ERASE the Buffer as in step 8d, the BASIC part of your program is also ERASEd. You must reLOAD if you want to use again.
- *RBMU=Real Beginner Modem User
Lesson One has not been figured out yet.

The REAL Beginner's Guide to Modeming on a TS2068

Lesson 3 Downloading Text Files from a BBS

by P. Hill, RBMU*

A step by step road map of how to get your computer in sync with thousands of other TS users.



After getting on BBSs with the help of Lesson Two, you are now ready for lesson 3, the above data gives you an idea of the steps you must go through.

—NOTE: Below in the instructions, are ' before and after ' letters or words to be ENTERED —DO NOT include ' or < or > unless the BBS you are on requires it.

1. a) USE the Menu to locate Files, and File names. Text files sometimes end in .TXT, or .DOC, usually there is a line of data to help you guess what might be in the file, if Xmodem was used, length.
 - b) On TUBBS it is F)ile Directories - 'F'—<ENTER> and then you get a listing of the different file Directories. TIMEX is under 6 on TUBBS.
 - c) Write of printout titles EXACTLY as shown.
 - d) 'D;EXACTNAME.TXT' <ENTER> - you will be told there is no file under that name because you misspelled it, or you got it! Get ready to receive file, you got 40 seconds to:
2. a) CONTROL B (CAPS SHIFT & B) gets you the MENU at the bottom of the screen, then 'M' for MAIN MENU, 'D' gets you to the Buffer Menu.
 - b) 'E' erases Buffer.
 - c) 'X' toggles CONVersion to NONE.
 - d) <ENTER> back to MAIN MENU.
 - e) 'E' exits to BASIC.
 - f) PRINT USR 24415 <ENTER> sit back and don't touch anything. Little +'s will soon start walking across the screen. Any -'s, indicate an error, and it will try 10 times to get an error free load.
 - g) When done, TERMINAL Mode will return, 'G' Goodbye, and hangup.
3. a) Now to get the data from the buffer to tape, CONTROL B, M for menu, and you can see the BUFUSD, copy the number (bytes to be saved).
 - b) 'E' to exit to BASIC.
 - c) Put on a tape to save to. SAVE "name" CODE 26710, bytes from step 2g, <ENTER>
4. After SAVEing buffer data, LOAD "Unloader" into 2068. LOAD "name" data file from tape, until "done".
5. SAVE to tape under file name you desire.
6. LOAD MScript or Tasword into 2068, LOAD your converted buffer data file into your word processor.
7. Printout or save as you wish.

*RBMU=Real Beginner Modem User
Lesson One has not been figured out yet.

News, New, Views and Reviews.....

Late News Arrivals

NEWS: From the newsletter of the Indiana Sinclair-Timex Users Group, hosts of the 2nd Annual Midwest Timex-Sinclair Computerfest. (2ndAMTSC)

WHEN ? MAY 2nd & 3rd - Saturday & Sunday

WHERE ? LOCATION: Holiday Inn-North, Indianapolis, Indiana 46268 Tele: 317-872-9790 or 1-800-HOLIDAY for reservations. COST-special flat rate of \$52 for a room, regardless of the number of people in the party. You MUST mention you are attending the Midwest Timex-Sinclair Computerfest.

WHAT GOES? Friday May 1 at 8pm - a special Banquet for 2ndAMTSC workers. Invites to volunteer workers, workers for users groups with a table, or to Vendors displaying at the Fest. There is a separate charge for the banquet.

Saturday, May 2nd at 9am, doors to the FEST open until 6pm. Seminars and Lectures schedule will run from 10am until 5pm.

Sunday, May 3rd at 9am, doors open and remain open until 5pm. Lectures and seminars will run from 10am until 4pm.

On both days, a separate area will be maintained for a swap/flea market. Please no copyrighted material, no pirating, and non-vendors only. No charge for this, but it is asked that no one hog the area.

HOW MUCH? Admission cost is: PRE-Register before March 30 1987 is \$4 per individual, or \$7 per family.

Register after March 30, 1987 the price is \$6 for an individual, \$9 per family (at door price also).

Make checks payable to "Midwest Timex-Sinclair Computer Fest". WRITE legibly-use a typewriter or printer! When writing, tell us how many to expect in a family group, and if you wish a pre-registration confirmed, then enclose a SASE. Send your check to Midwest Timex-Sinclair Computer Fest, c/o Frank Davis, 513 East Main Street, Peru IN 46970

OTHER NOTES: CAB FARE from airport is \$13 to \$15. Holiday Inn has free transport to Airport, call them on arrival.

OTHER INNS:	Dillon Inn	1-800-253-7305, 317-875-7676
	Dollar Inn	1-317-872-0500
	Drury Inn	1-800-325-8300, 317-876-9777
	Red Roof Inn	1-800-848-7878, 317-872-3030
	Signature Inn	1-800-822-5252, 317-875-5656
	Embassy Suites	1-800-362-2779, 317-872-7700

Leave message for Frank Davis on ISTUG BBS at 1-317-898-3903 if you have more questions.

MORE NEWS: Hold on to your hats with this one, from Frank Davis, ISTUG, from Tom Bent, Tom will be offering through Tom Woods, a Non-volatile RAM cartridge in kit form for about \$40. Initially it will be for 64K, but with piggybacking, you could have up to 128K NV RAM.

STILL MORE NEWS: From ISTUG, good source of support for ZX8is and TS1000 is ARCTAN COMPUTER VENTURES, 1 Foxwell Square, Southfields, Northampton, NN3 5AT-write for prices, send a international reply coupon-only good reports on service.

WRAP UP Thanks to John and Wes, the info from ISTUG, TDM, and others this filled more pages than I figure-maybe I should reduced the type next time, hmmm I wonder. Best to all of you in 1987, it looks like a great year already, and I haven't seen the new W4 yet! PH


```

1 REM tape analyser
10 BORDER 0 PAPER 0: INK 7
11 CLEAR 29999
15 DEF FN p(x)=PEEK x+256*PEEK
(x+1): LET p=30016
20 FOR i=1 TO 16: READ a: POKE
29999+i,a: NEXT i
30 DATA 221,33,64,117,17,17,0,
75,55,205,86,5,216,195,48,117
40 PRINT INVERSE 1); " *T
oe Analyser* "; INVERSE
0
50 PRINT " NAME";TAB 10;"Leng
Remarks": PLOT 0,156: DR
255,0
60 PRINT #1;" Start tape, then
press any key": PAUSE 0
65 PRINT #1;AT 1.0,,
70 RANDOMIZE USR 30000
75 LET n$=""
80 LET type=PEEK p: LET l=FN p
(p+11): FOR i=p+1 TO p+10: LET n
$=n$+CHR$ PEEK i: NEXT i
90 LET l$=STR$ l: LET l$="
"(1 TO 6-LEN (l$)+l$
100 PRINT n$;l$," ";
110 IF type>3 THEN PRINT "Read
Error": GO TO 70
130 IF type<3 THEN GO TO 170
140 LET s=FN p(p+13)
150 IF s=18384 AND l=6192 THEN
PRINT "SCREEN# ": GO TO 170
160 PRINT "CODE at: ";s: GO TO
70
170 IF type=0 THEN GO TO 200
180 LET s=PEEK (p+14): LET t=IN
Y (s/32) LET l$=CHR$ (s-32*t+96
IF t=2 OR t=6 THEN LET l$=l$+
$
190 PRINT "Array: ";l$: GO TO 7
0
200 LET l=FN p(p+13): LET s=FN
p(p+15)
210 PRINT "Basic";
220 IF l<10000 THEN PRINT " LIN
E ";l;
230 PRINT GO TO 70

```

NAME	Length	Remarks
IMPRESSUM	2163	Basic LINE 1
COVERS	6912	CODE at: 32768
INHALT.	2675	Basic LINE 0

Thanks to Bill Pierson, PO Box 2011, APO 4Y 09069, for "Tape Analyser" works in spectrum mode, but will read tapes from 2068 or Spectrum. Handy for tape libraries to find just what is on that 30 minute tape.

```

*****
*   Sinclair Computer Users Society   *
*                                     *
*   est. 1982                         *
*-----*
* 1986---SINCUS OFFICERS---1987     *
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* TAPE LIBRARY.....DON LAMEN, HAL SOHN *
* EDITOR.....PAUL HILL              *
*****

```

SNOW

<<<<<EMERGENCY>>>>>

NOTICE

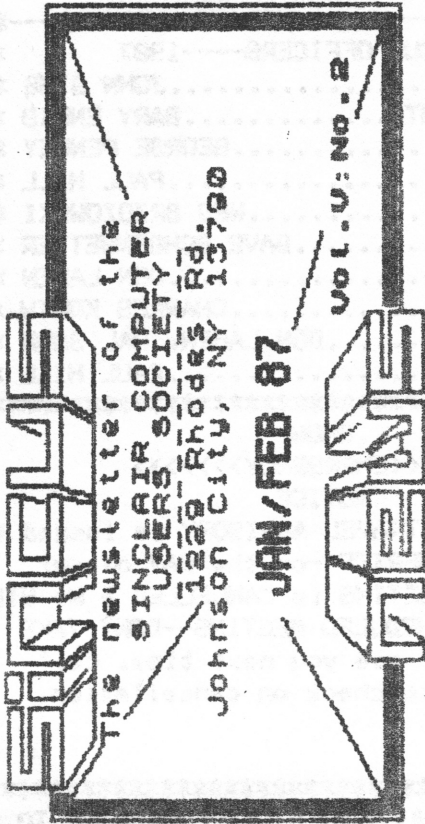
If a SNOW EMERGENCY TRAVEL ADVISORY is issued by the BROOME COUNTY SHERIFF -on the DAY of our MONTHLY meet, the MEETING is CANCELLED & We WILL meet at the next SCHEDULED MEETING--DONT TAKE CHANCES, We'd rather see you next time. call 790-7219 after 5pm to check on cancellation. DRIVE WITH CARE

```

*****
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```

ED NOTES: ON THE FRONT PAGE, THE I AND ME AND ANY FIRST PERSON IS ME, SOMETIMES I GET CARRIED AWAY AND FORGET TO TELL YOU WHO IS WRITING WHAT. Sometimes my opinions on what others should do gets into the letter, I gotta try to remember about glass houses. The format for this letter changes with each issue. As most of the work is fun and instructive, it is also time consuming. My search for the best, lowest cost, easiest to read format done in the least amount of time continues, anyone with any new ideas?? Be glad to hear from you, Thanks -Paul Hill



**NEXT MEETINGS:
WEDNESDAY, AT 7PM
JANUARY 21
FEBRUARY 18**
At the VESTAL PUBLIC LIBRARY

Upcoming elections in MAY-consider running for office-take part in your club and be sure to VOTE!

Help needed with our Tape Swap, see or drop a note or call Paul Hill

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